Claim Amendments

1. (Currently Amended) A method for scheduling a plurality of virtual machines comprising:

determining a respective resource requirement ~~(X_i)~~ for each virtual machine ~~(VM)~~;

determining a respective interrupt period ~~(Y_i)~~ for each virtual machine ~~VM~~; and

scheduling said plurality of virtual machines ~~VMs~~ based, at least in part, on said respective resource requirement ~~X_i~~ and interrupt period ~~Y_i~~ values.

2. (Currently Amended) The method of claim 1 wherein, determining said respective resource requirement ~~X_i~~ and interrupt period ~~Y_i~~ comprises communicating said respective resource requirement ~~X_i~~ and interrupt period ~~Y_i~~ from an operating system ~~(OS)~~ running within said respective virtual machine ~~VM~~.

3. (Currently Amended) The method of claim 1 wherein, determining said resource requirement ~~X_i~~ and said interrupt period ~~Y_i~~ comprises communicating said resource requirement ~~X_i~~ and said interrupt period ~~Y_i~~ from an application running within an operating system ~~(OS)~~ running within said respective virtual machine ~~VM~~.

4. (Currently Amended) The method of claim 3 further comprising:

dynamically maintaining values for said resource requirement ~~X_i~~ and said interrupt period ~~Y_i~~, wherein said application is a resource management application.

5. (Currently Amended) The method of claim 1 wherein, determining said resource requirement ~~X_i~~ comprises communicating said resource requirement ~~X_i~~ from an operating system ~~(OS)~~ running within said respective virtual machine ~~VM~~.

6. (Currently Amended) The method of claim 5 wherein, determining said resource requirement ~~X_i~~ comprises communicating said resource requirement ~~X_i~~ from

an application running within an operating system ~~(OS)~~ running within said respective virtual machine ~~VM~~.

7. (Currently Amended) The method of claim 6, wherein said application is a resource management application, which dynamically maintains said respective resource requirement ~~X_i~~.

8. (Currently Amended) The method of claim 1, wherein determining a respective resource requirement ~~X_i~~ comprises:

monitoring whether a virtual machine ~~VM~~ reaches an idle loop;

increasing said respective resource requirement ~~X_i~~ if said idle loop is not reached;

decreasing said respective resource requirement ~~X_i~~ if said idle loop is reached before a predetermined percentage of said resource requirement has been utilized.

9. (Currently Amended) The method of claim 8, wherein determining respective interrupt period ~~Y_i~~ values comprises:

filtering non-periodic interrupts;

rejecting aperiodic interrupts;

estimating said respective interrupt period ~~Y_i~~ values for periodic interrupts; and

converging said respective interrupt period ~~Y_i~~ values to be substantially equivalent to actual periods for said periodic interrupts.

10. (Currently Amended) An article comprising: a storage medium having stored thereon instructions that, when executed, result in a computing platform having the capability to:

schedule a plurality of virtual machines ~~(VMs)~~ implemented in said computing platform based, at least in part, on a respective resource requirement ~~(X_i)~~ and an a respective interrupt period ~~(Y_i)~~ for each virtual machine ~~VM~~ of said plurality.

11. (Currently Amended) The article of claim 10, wherein said instructions, when executed result in the capability to communicate said respective resource requirement ~~X_i~~ from an application running within a virtual machine ~~VM~~ of said plurality.

12. (Currently Amended) The article of claim 11, wherein said instructions, when executed result in the capability to communicate said respective interrupt period ~~Y_i~~ from an application running within a virtual machine ~~VM~~ of said plurality.

13. (Currently Amended) The article of claim 10, wherein said instructions, when executed result in the capability to communicate said respective resource requirement ~~X_i~~ and said respective interrupt period ~~Y_i~~ from an operating system running within a virtual machine ~~VM~~ of said plurality.

14. (Currently Amended) The article of claim 10, wherein said instructions, when executed result in the capability to communicate said respective resource requirement ~~X_i~~ and said respective interrupt period ~~Y_i~~ from a resource management application running within a virtual machine ~~VM~~ of said plurality.

15. (Currently Amended) The article of claim 10, wherein said instructions, when executed result in the capability to determine said respective interrupt period ~~Y_i~~ by comparing an expected interrupt period with an actual interrupt period and adjusting said respective interrupt period ~~Y_i~~ based, at least in part, on said comparison.

16. (Currently Amended) The article of claim 10, wherein said instructions, when executed result in the capability to determine said respective resource requirement ~~X_i~~ by detecting the occurrence of an idle loop within a virtual machine ~~VM~~

of said plurality and adjusting resource management ~~X~~ based, at least in part, on whether said idle loop occurs.

17. (Currently Amended) A method for determining interrupt period values comprising:

initializing said interrupt period values;

generating virtualized interrupts by virtualizing hardware interrupts;

filtering ~~non-period~~ known non-periodic interrupts;

rejecting detected aperiodic interrupts; and

adjusting said interrupt period values iteratively until substantially equivalent to actual interrupt periods.

18. (Currently Amended) The method of claim 17, further comprising:

acquiring resource requirement values; and

scheduling a plurality of virtual machines ~~(VMs)~~ to achieve real-time deadlines based, at least in part, on said interrupt period values and resource requirement values.

19. (Currently Amended) The method of claim 18, wherein said resource requirement values are acquired from said plurality of virtual machine ~~VMs~~.

20. (Original) The method of claim 17, further comprising determining resource requirement values, wherein determining said resource requirement values comprises:

initializing said resource requirement values; and

adjusting said resource requirement values iteratively based, at least in part, on a determination of an occurrence of a respective predetermined instruction.

21. (Currently Amended) The method of claim 20, wherein adjusting said resource requirement values comprises:

increasing said resource requirement values if said respective predetermined instruction does not occur;

decreasing said resource requirement values if said respective predetermined instruction occurs prior to a target time; and

scheduling a plurality of virtual machines ~~(VMs)~~ based, at least in part, on said interrupt period values and said resource requirement values.

22. (Currently Amended) An article comprising: a storage medium having stored thereon instructions that, when executed, result in a computing system having the capability to:

initialize interrupt period values;

generate virtualized interrupts by virtualizing hardware interrupts;

filter ~~non-period~~ known non-periodic interrupts;

reject detected aperiodic interrupts; and

adjust said interrupt period values iteratively until substantially equivalent to actual interrupt periods.

23. (Currently Amended) The article of claim 22, wherein said instructions, when executed, further result in the capability to:

acquire resource requirement values; and

schedule a plurality of virtual machines ~~(VMs)~~ to achieve real-time deadlines based, at least in part, on said interrupt period values and resource requirement values.

24. (Currently Amended) The article of claim 23, wherein said resource requirement values are acquired from said plurality of ~~VMs~~.

25. (Original) The article of claim 22, wherein said instructions, when executed, result in said computing platform having the further capability to:

determine resource requirement values, wherein determining said resource requirement values comprises:

initializing said resource requirement values; and

adjusting said resource requirement values iteratively based, at least in part, on a determination of an occurrence of a respective predetermined instruction.

26. (Currently Amended) The article of claim 25, wherein adjusting said resource requirement values comprises:

increasing said resource requirement values if said respective predetermined instruction does not occur;

decreasing said resource requirement values if said respective predetermined instruction occurs prior to a target time; and

scheduling a plurality of virtual machines ~~(VMs)~~ based, at least in part, on said interrupt period values and said resource requirement values.

27. (Currently Amended) A system comprising:

a computing platform;

said computing platform being adapted to implement, at least, a virtual machine monitor ~~(VMM)~~ and a plurality of virtual machines ~~(VMs)~~;

said virtual machine monitor ~~VMM~~ being capable of scheduling said virtual machines ~~VMs~~ to execute real-time applications based, at least in part, on a resource requirement ~~(X_i)~~ for each virtual machine ~~VM~~ and an interrupt period ~~(Y_i)~~ for each virtual machine ~~VM~~.

28. (Currently Amended) The system of claim 27, further comprising:

an interface capable of communicating respective resource requirement ~~X_i~~ and interrupt period ~~Y_i~~ values for said each virtual machine ~~VM~~ to said virtual machine monitor ~~VMM~~.

29. (Currently Amended) The system of claim 27, wherein said virtual machine monitor ~~VMM~~ comprises:

a feedback loop capable of determining a respective resource requirement ~~X_i~~ for said each virtual machine ~~VM~~;

a hardware interrupt virtualizer capable communicating device interrupts to said plurality of virtual machines ~~VMs~~ and filtering non-periodic interrupts;

an interrupt period detector ~~(IPD)~~ capable of determining said periods for periodic interrupts and communicating said periods to a scheduler; and

said scheduler being capable of said scheduling of said plurality of virtual machines ~~VMs~~.

30. (Currently Amended) The system of claim 29, wherein said feedback loop comprises:

a detector capable of determining whether each of said virtual machines ~~VMs~~ issues a predetermined instruction and indicating said determinations to a proportional integral derivative ~~(PID)~~ controller;

said proportional integral derivative controller ~~PID~~ being capable of adjusting said respective resource requirement ~~X_i~~ for said each virtual machine ~~VM~~ based, at least in part, on said determination and communicating said adjusted respective resource requirement ~~X_i~~ to said scheduler.